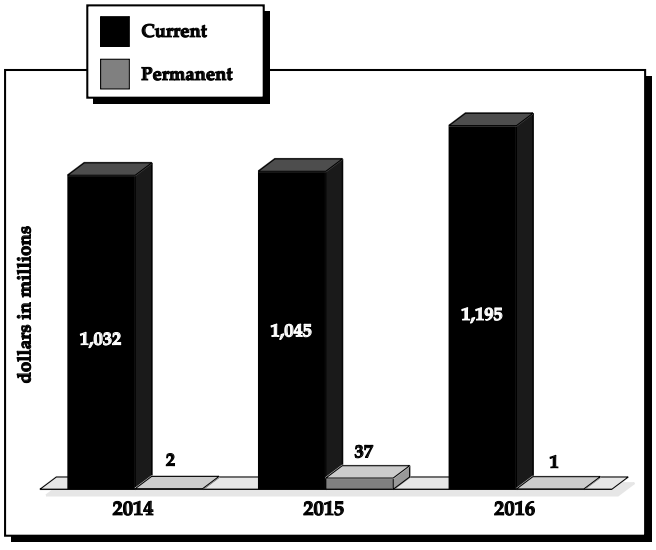
U.S. GEOLOGICAL SURVEY

Mission – The mission of the U.S. Geological Survey is to provide reliable scientific information to describe and understand the Earth, minimize loss of life and property from natural disasters, support the sustainable stewardship of land and water, and manage biological, energy, and mineral resources.

Budget Overview – The 2016 USGS budget is $1.2 billion, an increase of $149.8 million above the 2015 enacted level. The USGS estimates staffing will equal 8,136 full time equivalents in 2016, an increase of 207 FTE from 2015 enacted. The 2016 budget reflects the Administration's commitment to invest in research and development to support sustainable economic growth, manage competing demands on environmental resources, address global climate change and move toward a clean energy future, and ensure the security and well-being of the Nation. Sustainable stewardship of natural resources requires strong investments in research and development in the natural sciences to strengthen the scientific basis for decisionmaking. The USGS budget invests in critical research, development, and monitoring infrastructure, to support natural resource decisionmaking, particularly in areas that support Interior's resource management missions and trust responsibilities, and to provide world-class science to Federal, State, tribal, local, and international partners who rely on USGS data, information, and tools.

The 2016 USGS budget makes strategic science investments to advance national priorities in support of: land management; sustainable energy and mineral development; responding to natural hazards; protection and restoration of important landscapes and ecosystems; sustainable water management; understanding and responding to climate change; and the science infrastructure and services that are the foundation of delivering that science to communities and decisionmakers. The USGS investments in the 2016 budget, as highlighted below, reflect the interdisciplinary science and tools needed to address the increasingly complex challenges that face the Nation and planet in managing resources in a time of rapid change, including a program increase of $3.6 million to cover health care benefits for seasonal employees.

USGS Funding



Meeting Water Challenges in the 21st Century – The USGS budget provides $31.0 million, a $14.6 million increase over 2015, to support sustainable water management through the WaterSMART initiative. This includes increases for: monitoring and science to respond to persistent drought; enhanced access and use of water information through the new Open Water Data initiative; understanding and managing the quality and availability of surface and groundwater resources; better integration of data and models; and enabling adaptive management of watersheds to support the resilience of the communities and ecosystems that depend on them.

Powering Our Future and Supporting Sustainable Energy and Mineral Development – The 2016 USGS budget provides $43.5 million for the Secretary's Powering Our Future initiative, $7.4 million above the 2015 enacted level. A total of $9.5 million in program increases across the energy and minerals portfolios in 2016 will support science to advance and promote understanding of: the development impacts and sustainability of conventional and unconventional oil and gas resources; renewable energy sources such as geothermal, wind, and solar; critical minerals such as rare earth minerals; and

U.S. Geological Survey
Facts

- **Founded by an Act of Congress in 1879.**
- **Is the Nation's largest water, earth, and biological science and civilian mapping agency.**
- **Employs over 8,200 scientists, technicians, and support staff working in more than 400 locations throughout the United States.**
- **With over 2,000 strategic partnerships, USGS is a primary Federal source of science-based information on ecosystem science, climate and land use change, energy and mineral resources, environmental impacts, natural hazards, water use and availability, and updated maps and images for the Earth's features available to the public.**
- **Generates and maintains data from over 8,000 streamgages and over 2,900 earthquake sensors that are available to the public.**
- **Over 23 million Landsat satellite scenes have been downloaded by users from the USGS archive since they became available at no charge in 2008, with over nine million downloaded in 2014 alone.**
- **The USGS archives provide direct access to air photos dating to 1939 and over 100 other satellite, cartographic, and topographic datasets characterizing the Earth's surface at no cost to the user.**

environmental impacts of resource development such as uranium. These investments include $19.5 million, $5.3 million above 2015, to support an interagency effort with the Department of Energy and Environmental Protection Agency to better understand the potential impacts of hydraulic fracturing.

Understanding and Managing Landscapes – The 2016 USGS budget provides $15.6 million in program increases for science to increase understanding of the Nation's landscapes to inform decisions for activities such as managing public lands, siting and mitigating resource development, and supporting conservation, recreation, and other land uses. Science activities include research for specific landscapes, such as the arctic, Columbia River, Puget Sound, Upper Mississippi River, Great Lakes, sage steppe, and coastal landscapes, and addresses landscape-level challenges associated with invasive species and species in decline. The budget provides program increases totaling $37.8 million for foundational data and tools needed to support landscape level understanding. These activities include land imaging, mapping, expanded lidar collection through the 3D Elevation Program, making data more easy to access and use under the Big Earth Data initiative, developing Landsat science products, and developing information and tools to assess ecosystem services and benefits.

The budgets of both USGS and the National Aeronautics and Space Administration provide funding to sustain the Landsat data stream, which is critical to understanding global landscapes, with the development of a Thermal Instrument Free Flyer, Landsat 9 satellite, and research and development to support the long-term sustainability of the program.

Responding to Natural Hazards – The 2016 budget includes a $6.6 million program increase to continue earthquake early warning development and volcano monitoring, expand the Global Seismic Network, add to the streamgage network, support solar flare monitoring, improve landslide and sinkhole understanding, and develop a rapid response capacity for wildfires. Efforts in 2016 will deliver science to support disaster response, which will provide enhanced situational awareness and ultimately a Nation with greater resilience to natural hazards.

Supporting Community Resilience in the Face of a Changing Climate – The USGS plays an important role in conducting research, providing data on the Earth's systems, and in developing information and tools to support communities and Federal, State, tribal, local, and international partners in understanding, preparing for, and responding to the impacts of global change. The 2016 budget provides program increases totaling $32.0 million to expand partnerships and collaboration, translate science into practical application-ready solutions, initiate new science activities in emerging areas, establish a national carbon inventory and tracking system, and build a clearinghouse of data, tools, shared applications, and best practices for use by resource managers, decisionmakers, and the public.

Ecosystems – The 2016 budget includes $176.3 million for Ecosystems, $19.3 million above 2015 enacted.

Through the Ecosystems activity, USGS conducts research and monitoring to better understand how ecosystems are structured and function to improve management of the Nation's natural resources. The 2016 Ecosystems budget includes a program increase of $2.8 million to advance landscape level research on ecological flows and drought in WaterSMART. Program increases totaling $2.1 million are provided for environmental studies to increase understanding of the arctic, sage steppe landscape, Columbia River, and Puget Sound critical ecosystems, and a program increase of $300,000 is provided for science support for Outer Continental Shelf ecosystems decisions. In addition to the $1.2 million program increase for hydraulic fracturing, a program increase of $150,000 is requested for wind and solar renewable energy studies.

Other program increases totaling $1.7 million are provided to address native pollinator issues, Great Lakes fisheries assessments, and continued research on brown treesnakes. A program increase of $2.0 million in Invasive Species supports early detection and rapid response to emerging invasive species to be coordinated with the National Invasive Species Council and a program increase of $2.0 million is requested to enhance support for and expand the work of the Cooperative Research Units. A program increase of $500,000 for science related to wildfire response across the Nation is requested and a program increase of $450,000 will support continuing efforts to further a national ecosystems services framework.

Climate and Land Use Change – The 2016 budget provides a total of $191.8 million for Climate and Land Use Change, an increase of $55.9 million above 2015. The proposed budget for the Climate Variability subactivity is $82.6 million, an increase of $25.0 million above the 2015 enacted level. This subactivity provides practical scientific information to inform resilient and adaptive natural resource and land management on a landscape scale and prioritizes and advances implementation of the President's Climate Action Plan. The National Climate Change and Wildlife Science Center and the eight Department of the Interior Climate Science Centers are funded at $37.4 million, a program increase of $10.6 million above 2015. The increase includes $1.0 million for drought research in WaterSMART, $500,000 for landscape research in the arctic, and $500,000 for resilient coastal landscapes and communities. Additional program increases include $2.3 million for interagency coordination, $2.5 million for tribal climate science partnerships, $3.0 million for translational science grants, and $800,000 for a vulnerability assessment database and field guide.

Climate Research and Development program increases include $1.1 million for drought research in WaterSMART, $1.5 million for climate and land cover change effects, and $2.3 million for emerging science needs. The 2016 budget provides a program increase of $8.7 million in Carbon Sequestration for biological carbon sequestration research, tools, and demonstration projects. This work will support continued improvements to the national inventory, assessment, projection, and monitoring systems for carbon sinks. The USGS will work collaboratively with other Federal agencies to reduce uncertainty in measuring land carbon sinks, close data gaps, mitigate variability in methods and emissions estimates, and support projects that foster terrestrial carbon conservation. An additional program increase includes $400,000 for ecosystem services assessment in biological carbon sequestration.

The 2016 budget request for the Land Use Change subactivity is $109.3 million, $30.9 million above the 2015 enacted level. This subactivity ensures earth observation imagery collected via satellite is available and accessible to users and provides analyses of these data to quantify rates of land use change, identify key driving forces, and forecast future trends of landscape change. The 2016 budget provides a program increase of $4.0 million in the Land Remote Sensing program for Landsat science products for climate and natural resource assessments. Program increases to advance landscape level understanding include $650,000 in WaterSMART for drought research and remote sensing, $600,000 for Big Earth Data, $250,000 for studies to increase understanding of the arctic, and $500,000 for imagery datasets and analytical tools for coastal analysis that will be used for resilient coastal landscapes and communities.

In the Land Change Science program, the 2016 budget provides program increases of $300,000 to advance natural hazard science in scenario planning and response; $200,000 for coastal land use change and sea level rise studies that will be used for resilient coastal landscapes and communities; $400,000 for WaterSMART to develop innovative tools to use remote sensing information with elevation models to monitor reservoir levels; and $200,000 to establish methodologies and create tools for the assessment, mapping, and valuation of critical landscapes and ecosystems and their responses to changing climatic conditions.

The Landsat satellite program in the Land Remote Sensing program is funded at $77.6 million, $24.3 million above 2015, and includes funding for the maintenance and operation of ground systems and satellite operations. The successful launch of the Landsat 8 satellite in 2013 enables the continuation of the 42-year Landsat record. Following extensive study, the Administration has established a plan for a long-term Sustainable Land Imaging program that would extend the four-decade long Landsat series of measurements of the Earth's land

surfaces for another two decades. The plan includes three simultaneous activities. The first is the initiation of a new U.S.-built small satellite with a thermal imager that will launch as soon as is feasible, likely in 2019, and will operate either in conjunction with a European Sentinel-2 satellite or with Landsat 8. The second activity is development of a Landsat 9 satellite as a rebuild of Landsat 8, with a target launch date of 2023. The third activity is ongoing investment in technology development and systems innovation to reduce risk in next generation missions, including Landsat 10. In 2016, USGS will work with NASA to support the Administration's plan for a Sustainable Land Imaging program. The USGS requests $24.3 million to develop systems to operate the satellites and collect, archive, process, and distribute data for the program. Additional funding requests to complete this effort will be made in future fiscal years.

Energy, Minerals, and Environmental Health – The 2016 budget includes $103.3 million for Energy, Minerals, and Environmental Health, $11.0 million above the 2015 enacted level. In 2016, a technical adjustment is proposed to create two subactivities: the Mineral and Energy Resources subactivity, comprised of the Mineral Resources Program and Energy Resources Program, and the Environmental Health subactivity, comprised of the Contaminant Biology Program and Toxic Substance Hydrology Program. The proposed budget for the Mineral and Energy Resources subactivity is $75.8 million, an increase of $5.0 million above the 2015 level. This subactivity includes programs that conduct research and assessments on the location, quantity, and quality of the Nation's mineral and energy resources and produce science and information to support the safe and environmentally responsible development of these resources. The budget provides program increases in Mineral Resources of $2.4 million to enhance support for critical minerals research and $559,000 to address environmental impacts of minerals development. Program increases in Energy Resources include $1.6 million for hydraulic fracturing, $200,000 for geothermal energy research, $250,000 for evaluating the benefits of ecosystem services and nature based infrastructure, and $150,000 for supporting climate resilience. Increases are partially offset by reductions in lower priority activities within these programs.

The 2016 request for the Environmental Health subactivity is $27.5 million, $6.1 million above the 2015 enacted level. This subactivity conducts research on the impacts of human activities that introduce chemical and pathogenic contaminants into the environment and threaten human, animal, and ecological health. Program increases in Contaminant Biology include $1.4 million for hydraulic fracturing, $273,000 to study the environmental impacts of uranium mining, and $50,000 for Columbia River ecosystem restoration. Program increases in Toxic Substances Hydrology include $1.3 million for resilient coastal landscapes and communities along the Northeast coast, $1.8 million to study the environmental impacts of uranium mining, $700,000 for emerging contaminants and chemical mixtures, $250,000 for hydraulic fracturing, and $50,000 for Columbia River ecosystem restoration.

Natural Hazards – The 2016 budget provides $146.4 million for Natural Hazards, $11.2 million above the 2015 enacted level. This activity provides scientific information and tools to help understand and respond to hazards such as volcanoes, earthquakes, tsunamis, and landslides, among others, to reduce potential fatalities, injuries, and other social and economic impacts. This activity also includes efforts to characterize and assess coastal and marine processes, conditions, vulnerability, and change. The 2016 budget supports continued funding of $3.5 million in Earthquake Hazards for earthquake early warning and event characterization activities in partnership with States, academia, and others. The 2016 budget also supports continued funding of $2.0 million in the Volcano program to improve disaster response and provides an increase of $200,000 for geothermal energy research. The budget also provides the Landslide program with an increase of $500,000 to improve disaster response.

The 2016 Natural Hazards budget provides a program increase of $4.9 million for the Global Seismic Network for deployment of sensors procured by the Nuclear Security Administration in the Department of Energy. Program funding for Geomagnetism is increased by $1.7 million to support nowcasting, a critical component of the Nation's space weather monitoring infrastructure important for understanding and mitigating the impacts of solar flare events on infrastructure such as the Nation's electrical grid. Program increases in Coastal and Marine Geology include $2.1 million for resilient coastal landscapes and communities and $2.0 million for coastal resilience science and tools to support vulnerable arctic and island communities to plan and prepare for the impacts of climate change. This work will be coordinated with the Arctic and Pacific Climate Science Centers, Landscape Conservation Cooperatives, Bureau of Indian Affairs, Office of Insular Affairs, and other partners.

Water Resources – The 2016 budget includes $222.9 million for Water Resources, $11.6 million above the 2015 enacted level. This activity includes programs that collect, manage, and disseminate hydrologic data, model and analyze hydrologic systems, and conduct research and development leading to new understanding of and methods for gathering data. The activities are supported by a national network of streamgages, wells, and monitoring sites, which are leveraged by funds from State,

tribal, and local partners. In 2016, USGS plans to align the Water Resources Mission Area budget structure to the USGS Water Science Strategy by consolidating its seven existing programs into four major program areas. The Groundwater and Streamflow Information Program primarily focuses on collecting data and delivering water data. The other three programs, the National Water Quality Program, Water Availability and Use Science Program, and Water Resources Research Act Program primarily focus on science activities that promote understanding, predicting, and delivering water information.

The 2016 budget funds the Groundwater and Streamflow Information Program at $73.5 million with program increases of $1.9 million for the WaterSMART National Groundwater Monitoring Network and streamflow information, $700,000 to expand the use of streamgages, and $500,000 in support of tribal water rights. The Water Availability and Use Science Program is funded at $46.8 million with program increases totaling $5.5 million in WaterSMART for drought, a national hydrologic model, streamflow information, water use information, and water use research. An additional program increase of $750,000 is requested for arctic water research and monitoring. The National Water Quality Program is funded at $96.1 million with program increases of $901,000 for hydraulic fracturing, $717,000 for enhanced cooperative activities and urban waters studies, and $200,000 for critical landscape studies in the Puget Sound and upper Mississippi River. The budget also provides a program increase of $1.9 million in support of the National Water Quality Assessment, Cycle 3. Increases are partially offset by reductions in lower priority activities within the Water Resources Mission Area.

Core Science Systems – The 2016 budget provides $127.0 million for Core Science Systems, $19.7 million above the 2015 enacted level. This activity provides the Nation with access to science, information, data, and geospatial frameworks used to manage natural resources and plan for and respond to natural hazards. Biologic and geologic data archives and geospatial data in The National Map provide critical data about the Earth, its complex processes, and natural resources.

The 2016 budget for Science Synthesis, Analysis, and Research provides program increases of $500,000 for observations and measurements in Big Earth Data, $350,000 for native pollinators, $300,000 for geospatial analysis and synthesis of existing data to identify regional areas of concern, and $200,000 for drought studies in WaterSMART. The budget for National Cooperative Geologic Mapping provides program increases of $200,000 for improving disaster response for sinkholes and $500,000 for resilient coastal landscapes and communities.

The budget provides a program increase of $11.0 million in the National Geospatial Program for the Community Resilience Toolkit to leverage and expand the use of the government-wide Geospatial Platform to provide communities with robust geospatial tools for resilience planning, preparedness, and response in coordination with the Federal Geospatial Data Committee, Interior bureaus, and other Federal agencies. Program increases of $1.3 million for 3-D elevation Alaska mapping and $1.4 million for the 3-D elevation program will support the national effort to build a modern elevation foundation nationwide for stronger, more resilient communities. Additional increases include $1.0 million for the National Hydrography Database in WaterSMART; $500,000 to use lidar data for landscape level assessments in the Chesapeake Bay, and $500,000 to use lidar data for improving disaster response regarding coastal infrastructure. Finally, program increases totaling $800,000 are requested for the critical landscapes of Columbia River and Puget Sound.

Science Support – The 2016 budget request includes $112.8 million for Science Support, $7.2 million above the 2015 enacted level. This activity funds the executive, managerial, and accounting activities, information technology, and bureau support services of USGS. These support services underpin the science of USGS by providing the business supports that enable science to be conducted. The 2016 budget includes program increases in Administration and Management of $500,000 to enhance the Mendenhall post-doctoral program, $300,000 to support tribal science coordination, $1.0 million to enhance youth and science education, $200,000 for engaging and mentoring youth in underserved communities in Earth and biological sciences through outreach activities and science camps, and $200,000 for science coordination. An increase of $2.0 million will enhance science support capacity to advance critical science mission goals as will a program increase of $620,000 in Information Services.

Facilities – The 2016 budget provides $114.3 million for Facilities, $13.9 million above the 2015 enacted level. This activity provides safe, functional workspace, laboratories, and other facilities needed to accomplish the USGS scientific mission. The budget provides program increases of $2.7 million to enhance operation and maintenance efficiencies in the real property portfolio, $2.0 million for sustainability investments to meet the goals of Executive Order 13514, and $11.6 million to reduce the facilities footprint of USGS nationwide by consolidating and improving the efficiency of space and real property. Through these cost savings and innovation plan efforts, USGS has cumulatively reduced its footprint by over 540,000 rentable square feet from 2012 through 2014. In 2016, USGS anticipates an additional reduction of 175,000 RSF, bringing the overall footprint reduction to 715,000 RSF.

This is a 12 percent decrease of the USGS space portfolio since 2012. Over the next four to six years these investments will pay for themselves by lowering USGS rental and maintenance costs thus saving Federal resources.

Fixed Costs – Fixed costs of $9.0 million are fully funded.

SUMMARY OF BUREAU APPROPRIATIONS

(all dollar amounts in thousands)

Comparison of 2016 Request with 2015 Enacted

	2015 Enacted		2016 Request		Change	
	FTE	Amount	FTE	Amount	FTE	Amount
Current						
Surveys, Investigations, and Research	4,935	1,045,000	5,142	1,194,782	+207	+149,782
Subtotal, Appropriations	4,935	1,045,000	5,142	1,194,782	+207	+149,782
Permanent						
Operations and Maintenance of Quarters	0	40	0	42	0	+2
Contributed Funds	7	1,258	7	1,062	0	-196
Surveys, Investigations, and Research	0	35,680	0	0	0	-35,680
Subtotal, Permanents and Other	7	36,978	7	1,104	0	-35,874
Reimbursements, Allocations, and Other						
Reimbursements	2,687	0	2,687	0	0	0
Allocation	71	0	71	0	0	0
Working Capital Fund	229	0	229	0	0	0
Subtotal, Reimbursements, Allocation, and Other	2,987	0	2,987	0	0	0
TOTAL, U.S. GEOLOGICAL SURVEY	**7,929**	**1,081,978**	**8,136**	**1,195,886**	**+207**	**+113,908**

HIGHLIGHTS OF BUDGET CHANGES

By Appropriation Activity/Subactivity

APPROPRIATION: Surveys, Investigations, and Research

	2014 Actual	2015 Enacted	2016 Request	Change
Ecosystems				
Status and Trends	20,473	20,473	22,178	+1,705
Fisheries	20,886	20,886	25,422	+4,536
Wildlife	44,757	45,257	46,671	+1,414
Environments	36,244	36,224	42,755	+6,531
Invasive Species	13,080	16,830	19,281	+2,451
Cooperative Research Units	17,371	17,371	19,992	+2,621
Subtotal, Ecosystems	152,811	157,041	176,299	+19,258
Climate and Land Use Change				
Climate Variability	53,589	57,589	82,572	+24,983
Land Use Change	78,386	78,386	109,256	+30,870
Subtotal, Clim. and Land Use Chge	131,975	135,975	191,828	+55,853
Energy, Minerals, and Environmental Health - *new structure*				
Mineral and Energy Resources	[71,901]	[70,826]	75,785	+75,785
Environmental Health	[19,614]	[21,445]	27,517	+27,517
Subtotal, Energy, Minerals, and Environmental Health	[91,515]	[92,271]	103,302	+103,302
Energy, Minerals, and Environmental Health - *old structure*				
Mineral Resources	45,931	45,931	0	-45,931
Energy Resources	25,970	24,895	0	-24,895
Contaminant Biology	9,647	10,197	0	-10,197
Toxic Substances Hydrology	9,967	11,248	0	-11,248
Subtotal, Energy, Minerals, and Environmental Health	91,515	92,271	0	-92,271
Natural Hazards				
Earthquake Hazards	53,803	59,503	57,952	-1,551
Volcano Hazards	23,121	25,121	25,709	+588
Landslide Hazards	3,485	3,485	4,039	+554
Global Seismographic Network	4,853	4,853	9,799	+4,946
Geomagnetism	1,888	1,888	3,624	+1,736
Coastal and Marine Geology	41,336	40,336	45,230	+4,894
Subtotal, Natural Hazards	128,486	135,186	146,353	+11,167
Water Resources - *new structure*				
Water Availability and Use Science	[38,544]	[40,919]	46,758	+46,758
Groundwater and Streamflow Information Program	[66,069]	[69,707]	73,533	+73,533
National Water Quality	[96,168]	[94,141]	96,087	+96,087
Water Resources Research Act Prog	[6,500]	[6,500]	6,500	+6,500
Subtotal, Water Resources	[207,281]	[211,267]	222,878	+222,878
Water Resources - *old structure*				
Groundwater Resources	8,948	11,348	0	-11,348
National Water Quality Assessment	58,859	59,459	0	-59,459
Hydrologic Research and Developmt.	10,915	11,215	0	-11,215
National Streamflow Information Prog	33,701	34,901	0	-34,901
Hydrologic Networks and Analysis	28,884	30,134	0	-30,134

	2014 Actual	2015 Enacted	2016 Request	Change
Cooperative Water Program	59,474	57,710	0	-57,710
Water Resources Research Act Program	6,500	6,500	0	-6,500
Subtotal, Water Resources	207,281	211,267	0	-211,267
Core Science Systems				
Science Synthesis, Analysis, and Research Program	24,314	24,299	25,897	+1,598
National Cooperative Geologic Mapping Program	24,397	24,397	25,339	+942
National Geospatial Program	60,096	58,532	75,731	+17,199
Subtotal, Core Science Systems	108,807	107,228	126,967	+19,739
Science Support				
Administration and Management	86,985	84,192	90,599	+6,407
Information Services	23,719	21,419	22,229	+810
Subtotal, Science Support	110,704	105,611	112,828	+7,217
Facilities				
Rental Payments and Operations and Maintenance	93,141	93,141	107,047	+13,906
Deferred Maintenance and Capital Improvement	7,280	7,280	7,280	0
Subtotal, Facilities	100,421	100,421	114,327	+13,906
TOTAL APPROPRIATION	1,032,000	1,045,000	1,194,782	+149,782

Detail of Budget Changes

	2016 Change from 2015 Enacted
TOTAL APPROPRIATION	+149,782
Ecosystems	+19,258
Status and Trends	+1,705
Pollinators	+1,210
Seasonal Workers Healthcare	+254
Fixed Costs	+241
Fisheries	+4,536
Great Lakes Fisheries Assessments	+250
Unconventional Oil and Gas Research	+1,200
WaterSMART - Ecological Flows	+2,500
Seasonal Workers Healthcare	+301
Fixed Costs	+285
Wildlife	+1,414
All-of-the-Above Energy - Renewable Energy Wind and Solar	+150
Seasonal Workers Healthcare	+649
Fixed Costs	+615
Environments	+6,531
Critical Landscapes	
Arctic	+700
Columbia River	+150
Puget Sound	+200
Sage Steppe Landscape	+1,000
Ecosystem Services	
National Ecosystems Framework	+450
Natural Hazard Science for Wildfire Disaster Response	+500
Internal Transfer from National Water Quality	+2,191
OCS Ecosystems Decisions	+300
WaterSMART - Drought	+300
Seasonal Workers Healthcare	+380
Fixed Costs	+360
Invasive Species	+2,451
Brown Treesnake	+250
New and Emerging Invasives of National Concern	+2,000
Seasonal Workers Healthcare	+103
Fixed Costs	+98
Cooperative Research Units	+2,621
CRU Enhanced Support and Scientists for Tomorrow	+2,000
Seasonal Workers Healthcare	+319
Fixed Costs	+302
Climate and Land Use Change	+55,853
Climate Variability	+24,983
Biological Carbon Monitoring and Tools	+6,500
Biological Carbon Sequestration in Land Management	+200

	2016 Change from 2015 Enacted
Climate Adaptation and Resiliency - Vulnerability Assessment Database and Field Guide	+800
Resilient Coastal Landscapes and Communities: Climate Outputs	+500
Critical Landscapes - Arctic	+500
Ecosystem Services Biological Carbon Sequestration	+400
Emerging Science Needs	+2,268
Grand Challenge Carbon Inventory and Decision Support Tools	+2,000
Climate and Land Cover Change Effects	+1,500
Interagency Coordination	+2,250
Translational Science Grants	+3,000
Tribal Climate Science Partnerships	+2,500
WaterSMART - Drought	+2,155
Seasonal Workers Healthcare	+17
Fixed Costs	+393
Land Use Change	+30,870
Big Earth Data Cube	+600
Resilient Coastal Landscapes and Communities - Imagery Datasets and Analytical Tools for Coastal Analysis	+500
Coastal Land Use Change and Sea-level Rise	+200
Critical Landscapes - Arctic	+250
Ecosystem Services Landscape and Climate Conditions	+200
Natural Hazard Science for Disaster Response Through Scenario Planning and Response	+300
Landsat Ground Systems Development	+24,300
Landsat Science Products for Climate and Natural Resources Assessments	+4,000
National Civil Applications Program	-1,000
WaterSMART Drought	+250
Remote Sensing	+800
Seasonal Workers Healthcare	+19
Fixed Costs	+451
Energy, Minerals, and Environmental Health - *new structure*	+103,302
Mineral and Energy Resources	+75,785
Internal Transfer	+70,826
All-of-the-Above Energy - Renewable Energy Geothermal	+200
Alternative Energy Permitting on Federal Lands	+875
Ecosystem Services Evaluate Green Infrastructure Investment	+250
Enhancing Resilience in Coastal Infrastructure	+150
Critical Minerals	+2,440
Energy Resources Program Publications Contributions	-200
Unconventional Oil and Gas Research	+1,550
Sunsetting Activities	-2,000
Research and Development to Address Environmental Impacts of Minerals Development	+559
Seasonal Workers Healthcare	+130
Fixed Costs	+1,005
Environmental Health	+27,517
Internal Transfer	+21,445
Critical Landscapes - Columbia River	+100
Environmental Impacts of Uranium Mining	+2,023
Unconventional Oil and Gas Research	+1,650
Emerging Contaminants and Chemical Mixtures	+700
Resilient Coastal Landscapes and Communities - Contaminant Network Along Northeast Coast	+1,300
Seasonal Workers Healthcare	+34
Fixed Costs	+265
Energy, Minerals, and Environmental Health - *old structure*	-92,271
Mineral Resources	-45,931
Internal Transfer to Mineral and Energy Resources	-45,931
Energy Resources	-24,895
Internal Transfer to Mineral and Energy Resources	-24,895
Contaminant Biology	-10,197
Internal Transfer to Environmental Health	-10,197
Toxic Substances Hydrology	-11,248
Internal Transfer to Environmental Health	-11,248
Natural Hazards	+11,167
Earthquake Hazards	-1,551
Precision Monitoring for Non-Seismic Fault Activity	-700
Natural Hazard Science for Disaster Response - Earthquake Early Warning and Event Characterization	-1,502
Seasonal Workers Healthcare	+121
Fixed Costs	+530
Volcano Hazards	+588
All-of-the-Above Energy - Renewable Energy Geothermal	+200
Seasonal Workers Healthcare	+72
Fixed Costs	+316
Landslide Hazards	+554
Natural Hazard Science for Landslide Disaster Response	+500
Seasonal Workers Healthcare	+10
Fixed Costs	+44
Global Seismographic Network	+4,946
Natural Hazard Science for Disaster Response Through Primary Sensor Deployment	+4,920

	2016 Change from 2015 Enacted
Seasonal Workers Healthcare	+5
Fixed Costs	+21
Geomagnetism	+1,736
Natural Hazard Science for Disaster Response Through Improved Geomagnetic Monitoring	+1,700
Seasonal Workers Healthcare	+7
Fixed Costs	+29
Coastal and Marine Geology	+4,894
Critical Landscapes - Arctic	+2,000
Resilient Coastal Landscapes and Communities Resilience and Vulnerability	+2,109
Internal Transfer from Water Availability and Use Science	+174
Seasonal Workers Healthcare	+113
Fixed Costs	+498
Water Resources - *new structure*	+222,878
Water Availability and Use Science	+46,758
Internal Transfer	+40,919
Critical Landscapes - Arctic	+750
Hydrologic Research and Development Monitoring and Assessments	-550
Model Development and Research	-444
Internal Transfer to Coastal and Marine Geology	-174
WaterSMART	
Drought	+301
National Hydrologic Model	+750
Streamflow Information	+400
Water Use Information	+3,000
Water Use Research	+1,000
Seasonal Workers Healthcare	+187
Fixed Costs	+619
Groundwater and Streamflow Information Program	+73,533
Internal Transfer	+69,707
Hydrologic Research and Development Monitoring and Assessments	-100
Improving Disaster Response	
Expand Use of Streamgages	+700
Tribes	+500
WaterSMART	
Groundwater Network	+1,000
Streamflow Information	+928
Seasonal Workers Healthcare	+216
Fixed Costs	+582
National Water Quality	+96,087
Internal Transfer	+94,141
Critical Landscapes	
Puget Sound	+100
Upper Mississippi River	+100
Enhanced Cooperative Activities and Urban Waters	+717
Hydrologic Research and Development Monitoring and Assessments	-350
Support NAWQA Cycle Three	+1,881
Internal Transfer to Ecosystems Environments Program	-2,191
Unconventional Oil and Gas Research	+901
Water Quality Monitoring	-1,000
Seasonal Workers Healthcare	+450
Fixed Costs	+1,338
Water Resources Research Act Program	+6,500
Water Resources - *old structure*	-211,267
Groundwater Resources	-11,348
Internal Transfer to Water Availability and Use Science Program	-7,645
Internal Transfer to Groundwater and Streamflow Information Program	-3,703
National Water Quality Assessment	-59,459
Internal Transfer to Groundwater and Streamflow Information Program	-229
Internal Transfer to National Water Quality Program	-59,230
Hydrologic Research and Development	-11,215
Internal Transfer to Water Availability and Use Science Program	-4,976
Internal Transfer to Groundwater and Streamflow Information Program	-2,351
Internal Transfer to National Water Quality Program	-3,888
National Streamflow Information Program	-34,901
Internal Transfer to Water Availability and Use Science Program	-1,461
Internal Transfer to Groundwater and Streamflow Information Program	-33,440
Hydrologic Networks and Analysis	-30,134
Internal Transfer to Water Availability and Use Science Program	-15,441
Internal Transfer to Groundwater and Streamflow Information Program	-185
Internal Transfer to National Water Quality Program	-14,508
Cooperative Water Program	-57,710
Internal Transfer to Water Availability and Use Science Program	-11,396
Internal Transfer to Groundwater and Streamflow Information Program	-29,799
Internal Transfer to National Water Quality Program	-16,515
Water Resources Research Act Program	-6,500
Core Science Systems	+19,739
Science Synthesis, Analysis, and Research Program	+1,598
Big Earth Data - Observations and Measurements	+500
Ecosystem Services Decision Support Tools	+300

	2016 Change from 2015 Enacted
Pollinators	+350
WaterSMART - Drought	+200
Seasonal Workers Healthcare	+12
Fixed Costs	+236
National Cooperative Geologic Mapping	+942
Natural Hazard Science for Sinkhole Disaster Response	+200
Resilient Coastal Landscapes and Communities - Sea-level Rise Models	+500
Seasonal Workers Healthcare	+12
Fixed Costs	+230
National Geospatial Program	+17,199
3D Elevation	
Alaska Mapping and Map Modernization	+1,322
Coastal Lidar	+500
National Enhancement	+1,387
National Hydrography Database and Landscape Level Assessments - Chesapeake Bay	+500
Community Resilience Toolkit	+11,000
Critical Landscapes	
Columbia River	+350
Puget Sound	+450
WaterSMART	
National Hydrography Database	+1,000
Seasonal Workers Healthcare	+34
Fixed Costs	+656
Science Support	+7,217
Administration and Management	+6,407
Interior Science Coordination	+200
Support Science Mission, Infrastructure Capacity to Support Science	+1,997
Mendenhall Program Postdocs	+500
Outreach to Underserved Communities	+200
Tribal Science Coordination	+300
Youth and Education in Science	+1,000
Seasonal Workers Healthcare	+118
Fixed Costs	+2,092
Information Services	+810
Support Science Mission, Infrastructure Capacity to Support Science	+620
Seasonal Workers Healthcare	+19
Fixed Costs	+171
Facilities	+13,906
Rental Payments and Operations and Maintenance	+13,906
Operations and Maintenance Stewardship	+2,712
Reducing the Facilities Footprint Cost Savings and Innovation Plan	+11,602
Sustainability Investments	+2,000
Fixed Costs	-2,408
Subtotals for Changes Across Multiple Subactivities	
Seasonal Workers Healthcare	[+3,582]
Fixed Costs	[+8,969]